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28W POWER CONVERSION MODULE WITH CCFT BACKLIGHT INVERTOR FOR NOTE-BOOK SIZE COMPUTER (FOR 6 CELLS OF Ni-Cd BATTERY

Description

The AA9090A series DC/DC converter is designed to handle the power conversion requirements in a notebook size personal computer. It consists of a DC/DC converter section and a DC/AC inverter section, which can drive two CCFT backlight.

The DC-DC converter section generates 3 regulated DC outputs: 5V; 12V; and a –26V.

An extremely high efficiency of 85% minimize heat generation and conserve battery power, extending the battery life more than 20% compared with conventional DC-Dc converters for use for portable computers.

When the DC-DC converter is running off battery, two battery low signals are generated depending on the amount of energy left. Batt L1 indicates that the battery is running low and not much more energy is left. Batt L2 indicated that the battery is too low and battery life could be affected if the computer is not shut down immediately.

Batt L1 usually turns on a warning LED and Batt L2 usually drives some logic to the computer to initiate a shut down sequence, independent of user control.

Features:

- Designed for laptop / note-book computer applications.
- Extremely high efficiency – 85% typical
- Extremely small size 90mm x 40mm x 20mm
- Multi-level battery low warning signal with built-in hysterisis
- Full regulated 5V, 12 V output for gate drive of external power to support various power management application
- Battery in-use signal
- Remote converter disable
- Power OK signal
- 26V output for LCD
- AC output for CCFT
- Disable control for DC-AC inverter

A battery in-use signal informs the computer that the AC adaptor is not plugged in or powered on. It can be used to initiate battery conservation procedures such as timing out of hard disks which hard disk has not been accessed for an extended period of time.

A POK (power good) signal ensures the computer will power up reset properly.

A converter disable input allows the computer to shut down itself. When directly connected to the Batt L2 signal, the converter will shut itself down when battery voltage falls below a dangerous threshold.

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ELECTRICAL CHARACTERISTICS

(All parameters are specified at 25 C ambient temperature, unless otherwise specified)

From battery

- 6V to 11V, 6A max. at 6V

From adaptor / charger (SA35-3100)

- Constant 31W (35W surge for 30 seconds) power from AC adaptor / charger with voltage clamped by battery when the battery is not full.
- Trickle charge current from AC adaptor / charger will be applied when battery is full.

Input protection

- Adaptor should shut down before output exceeds 50W or input voltage is being clamped below 5V for more than 5 minutes.
- Battery should be protected by internal fuse in DC-DC converter and it is also expected the battery is protected by a thermal switch internally.

Disable pin is provided to shut off the DC-AC inverter section while the adjust pin allows a dimming control from 100% to 20% brightness.

Each of the 2 AC outputs can provide a 5mA current @ 350VAC.

Converter Outputs:

+5.1V@3.75A
+12V@0.1A
-26V@40mA

Absolute Maximum Ratings

Adaptor Input Voltage: 0 to +20V
Battery Input Voltage: 0 to +20V
Operating Ambient Temperature: 0 to 50^0C
Storage Temperature -40^0C to $+105^0$C

DC-DC Converter Outputs

Nominal Output Voltage	+5.1V	+12.6V	-26V
Minimum Load (A)	0.2	0.02	0
Maximum Load (A)	3.75	0.1	0.04
Surge Load (A) 30 secs.	4.6*	0.2*	--
Initial Tolerance (+/- %)	2	2	#
Line/load regulation (+/- %)	2	5	#
Output Ripple (mV pk-pk)	50	100	200@
OVP	6.2 – 6.8	--	--

*Surge load can only be drawn from either +5.1 or +12V at any time
25 – 30

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@ Measured with CCFT 100% duty cycle
Quiescent current (battery current drain when DC-DC converter and DC-AC inverter are disabled and AC adaptor is not in use -- <200uA

Efficiency @ full load and 7.2V input – 85% typical

DC-AC Inverter Outputs

Nominal output voltage (no load) – 1000Vrms (typical)

Nominal output voltage (full load) – 350Vrms (typical)

Output current (each output) – 5mA

Output frequency – 40 KHz

Dimming ratio – 0 to 100 %

Efficiency – 70%

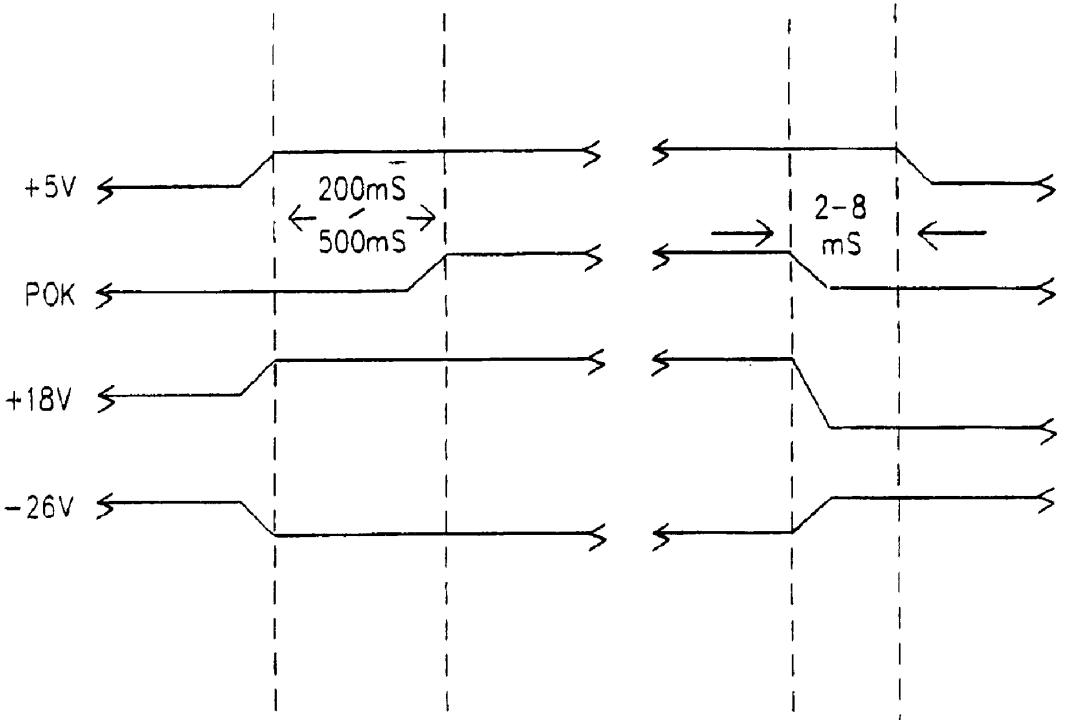
LOGIC LEVEL

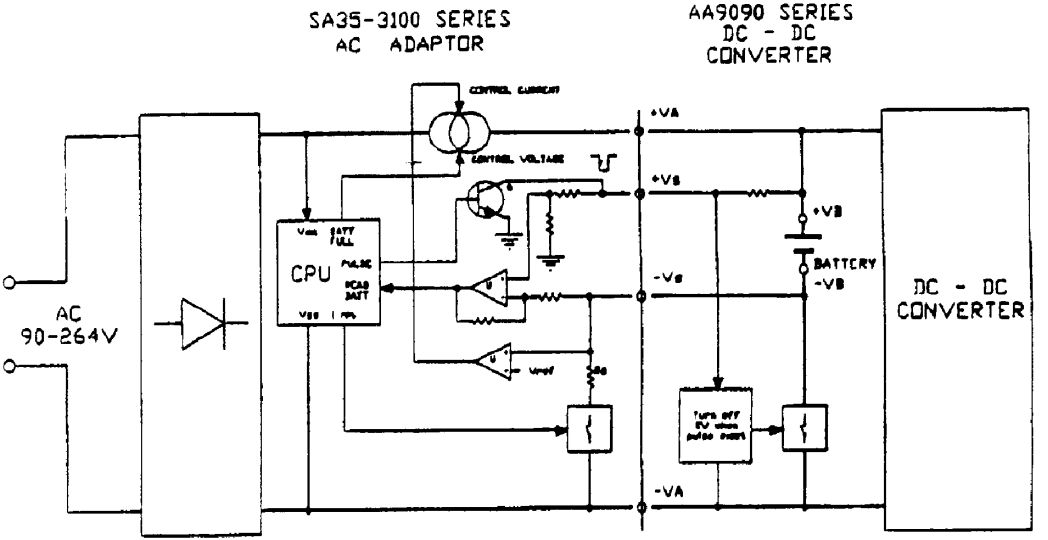
Batt L1, Batt L2, Batt-in-use, POK

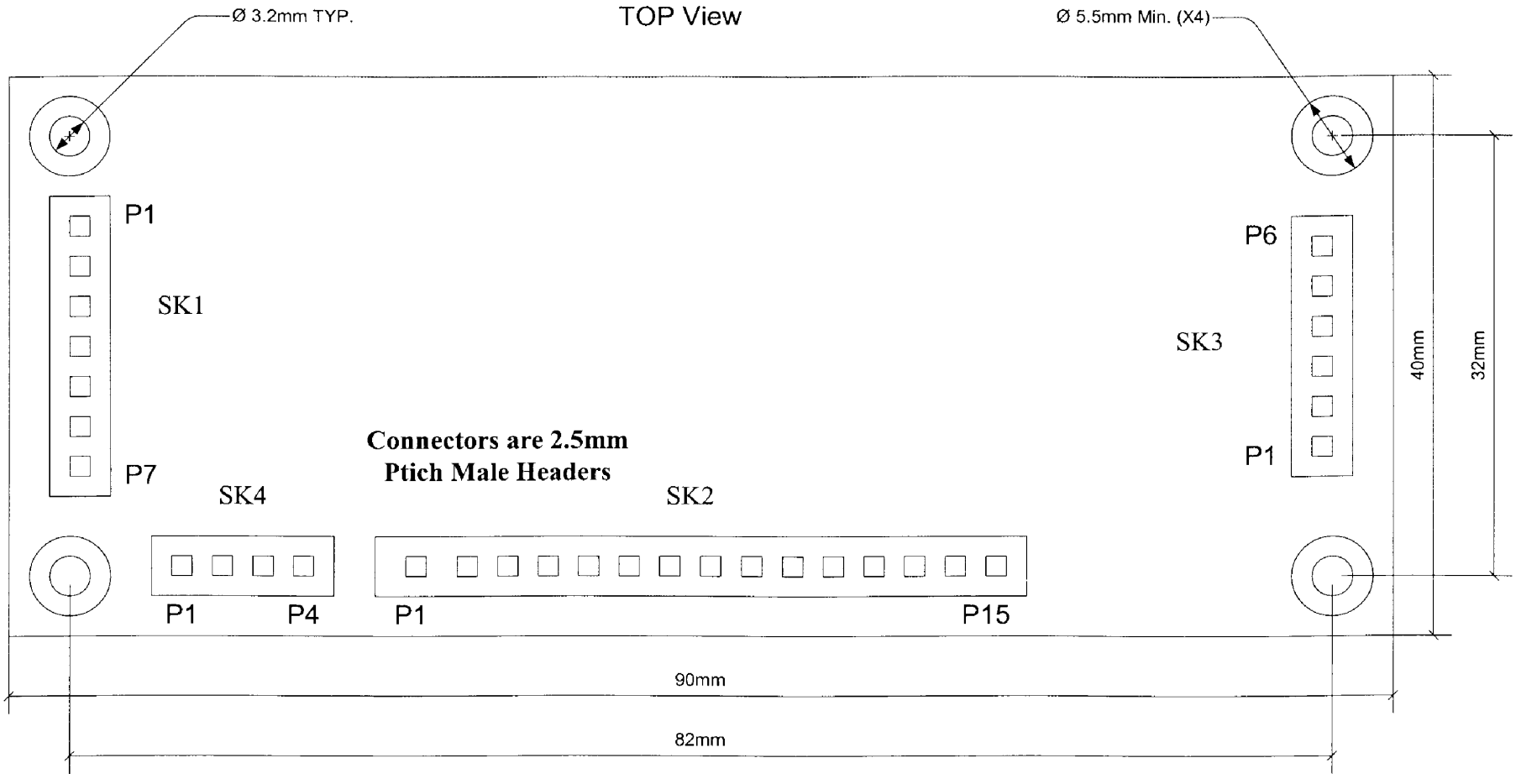
	Min.	Max.	Unit	
VOH	4	5	V	@ Io=10uA
VOL	0	0.5	V	@Io=40uA

Power Disable, AC Disable

	Min.	Max	Unit
VTH	3.5	5.0	V
VIL	0	1.0	V
IIH	8	10.0	uA


+5V
POK
+18V
-26V
200mS
500mS
2-8
mS


SA35-3100 SERIES
AC ADAPTOR
AA9090 SERIES
DC - DC
CONVERTER
AC
90-264V
CPU
+VA
+VB
+Vs
-Vs
BATTERY
-VB
-VA
DC - DC
CONVERTER



Input Connector (SK1)	
1	+Vin
2	+Vin
3	-Vin
4	-Vin
5	-Vs
6	-Vs
7	+Vs

Output Connector (SK2)	
1	5.1V
2	5.1V
3	-26V
4	+12.6V
5	0V
6	0V
7	Batt-in-use
8	Disable
9	CCFT Adj.
10	CCFT Disable
11	Batt L1
12	Batt L2
13	SW1
14	SW2
15	POK

CCFT Output (SK3)	
1	COM
2	COM
3	NC
4	V01
5	NC
6	V02

Batt Connector (SK4)	
1	+Batt
2	+Batt
3	-Batt
4	-Batt